Tribal Air Monitoring Outlook

US EPA/R&IE/CIE

"A Partnership between Tribes, ITEP and EPA"

TAMS CENTER

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Editor: Polly Hennessey

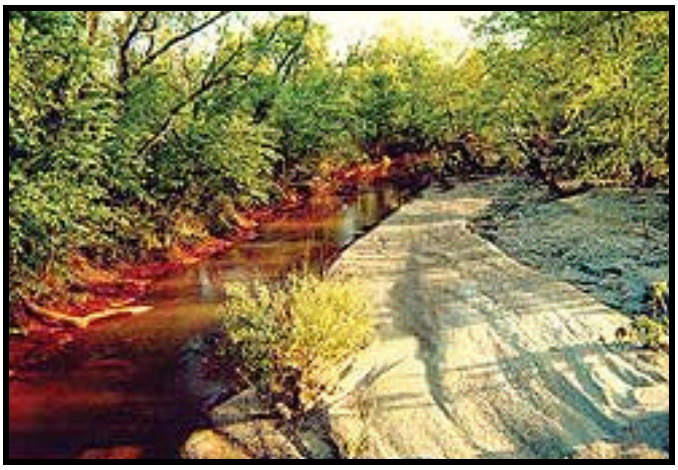
The Quapaw Tribe of Oklahoma and The Tar Creek Project

The Quapaw Indian Tribe of Oklahoma was originally located near the mouth of the Ohio River where they were part of a larger group known as the Dhegiha Sioux. As a member of this group, they belonged to the same Siouan linguistic family as the Ponca, Osage, Omaha and Kansas tribes. In the early 1600s, the Quapaw began to move downstream to the Mississippi River and settle in what is now known as Arkansas. This move earned them the tribal name of Ugakhpa, which means "downstream people." During the mid-1600s, the French explorers Robert De La Salle and Henri De Tonti encountered the Quapaw and began referring to them as Akansea or "Bow people of the south wind." The area in which the Akansea were located eventually became the State of Arkansas. Beginning in 1818, the United States government began obtaining land from the Quapaws until 1833 when, "the tribe was removed from Arkansas for the last time." The 1833 move put them into Indian Territory in what is now known as Oklahoma. In 1867, they were yet again forced to sign over a large portion of their lands. "Today, the Quapaw retain only a small parcel of historic trust lands of less than 13,000 acres."

In 1919, lead and zinc deposits were found on tribal lands. This discovery brought a fifty year period of intense mining activity, which included the Tar Creek area, with the last mines closing in the 1970s. The mining activity took place in what has been designated as the Tri-State Mining area, which encompasses portions of Oklahoma, Kansas and Missouri. Some of the mining operations were conducted at depths of 90 to 320 feet below ground surface in the Boone Aquifer. It should be emphasized that the Tar Creek site has become not only a state and federal issue, but also tribal. "The Quapaw Nation and a group of seven other small tribes in Ottawa County own 80 percent of the land that makes up the Tar Creek Superfund site." Environmental problems began showing up in 1979 with the advent of acid mine drainage from the underground mines flowing into Tar Creek through abandoned mine shafts and bore-holes. Along with the acid drainage from the mines, lead-contaminated soil had become a major source of surface contamination. This contaminated soil was then deposited into "chat" piles, which constituted approximately 165 million tons of

Chat Pile—Ottawa County
Note the proximity to the residential property.

Photo courtesy of EPA



Acid Mine Drainage into Lytle Creek
Note the reddish iron oxide staining on the vegetation and banks of the creek.

Photo courtesy of EPA

tailings, over 1,320 mine shafts and thousands of drill holes. With these considerations in mind, the Quapaw Nation has been in the forefront of a cooperative effort to resolve these problems.

In 1980, the Governor of Oklahoma established the Tar Creek Task Force to investigate acid mine drainage into Tar Creek. In 1983, the Tar Creek Site was listed on the National Priorities List (NPL). This list is used to guide the Environmental Protection Agency (EPA) "in determining which sites warrant further investigation" as to releases of hazardous substances, pollutants or contaminants. Remediation efforts by the EPA had begun addressing the acid mine drainage problem and the lead-contaminated residential yards; however, the Quapaw Tribe felt that one other area needed to be addressed, that of air quality. Leon Crow, Air Quality Manager, Quapaw Tribal Air Program, emphasized in a Tribal Case Study, that "Air quality is of primary concern to a majority of Tar Creek residents and tribal members." The tribe requested air monitoring equipment be placed within designated areas. After discussions with EPA's Office of Air and Radiation (OAR), it was determined that monitoring for fine particulate matter $PM_{2.5}$ and PM_{10} and lead was warranted. The tribe also requested that silica monitoring be included (this last was deemed necessary due to complaints from local residents).

Four air monitoring sites were selected: The Thomas Buffalo Allotment; the Whitebird Allotment; the Hum-bah-wat-tah Allotment and the Anna Beaver Allotment (which was also the quality assurance and quality control site). The tribal staff received training in several TAMS Center-sponsored courses, which included: Quality Assurance; PM monitoring; TEOM Ambient Particulate Continuous Monitoring and Air Quality Systems (EPA database). The tribe also participated in EPA's National Performance Audit Program (one site every quarter); an Independent Audit Program (one site every quarter) and a Self Audit Program, conducted on every sampler on a bi-weekly basis. In addition to the formal course training at the TAMS Learning Center, located in Las Vegas, Nevada, at EPA's Radiation and Indoor Environments National Laboratory (R&IE), two on-site training sessions were conducted in

March 2003 and January 2004 by Joe Hameed, Technical Specialist II, with the TAMS Center. The training concentrated on the operation, maintenance and calibration of the equipment; auditing procedures; Quality Assurance/Quality Control checks; Data Management and Verification and Troubleshooting Processes.

Joe Hameed, Technical Specialist II, TAMS Center, and Leon Crow, Air Program Manager, Environmental Office for the Quapaw Tribe, check the apparatus inside an Ozone Calibrator.

With the expertise and training provided by the TAMS Center, the Quapaw Tribe of Oklahoma, has formed the groundwork for reaching its ultimate goal of finding a comprehensive solution to the Tar Creek dilemma.

If you have any questions concerning the training and on-site visits conducted by the TAMS staff, please call Joe Hameed at (702) 784-8269 or email to Joe.Hameed@nau.edu. For questions involving the Tar Creek Project and the Quapaw Tribe, please call Leon Crow at (918) 542-1853 or email to LCrow@Quapawtribe.com.

TAMS Center On Site Training

Joe Hameed, Technical Specialist, TAMS, conducts Gaseous Monitoring Instrument training; Nathaniel Herbst, Air Quality Specialist, Southern Ute Tribe, Colorado; Frank Geasland, Air Quality Specialist, Quapaw Tribe, Oklahoma.

Tom Stelle, Air Quality Specialist, Quapaw Tribe, Oklahoma, and Joe Hameed, Technical Specialist II, TAMS, make adjustments to a meteorological sensor.

Frank Geasland, Air Quality Specialist, Quapaw Tribe, Oklahoma, erecting a Meteorological Tower.

Leon Crow, Air Program Manager, Quapaw Tribe, Oklahoma, and Joe Hameed, Technical Specialist II, TAMS, inspecting exhaust lines from monitoring equipment.